

VEASEY (C. A.)

al

OPHTHALMIA NEONATORUM.

BY

C. A. VEASEY, M.D.,

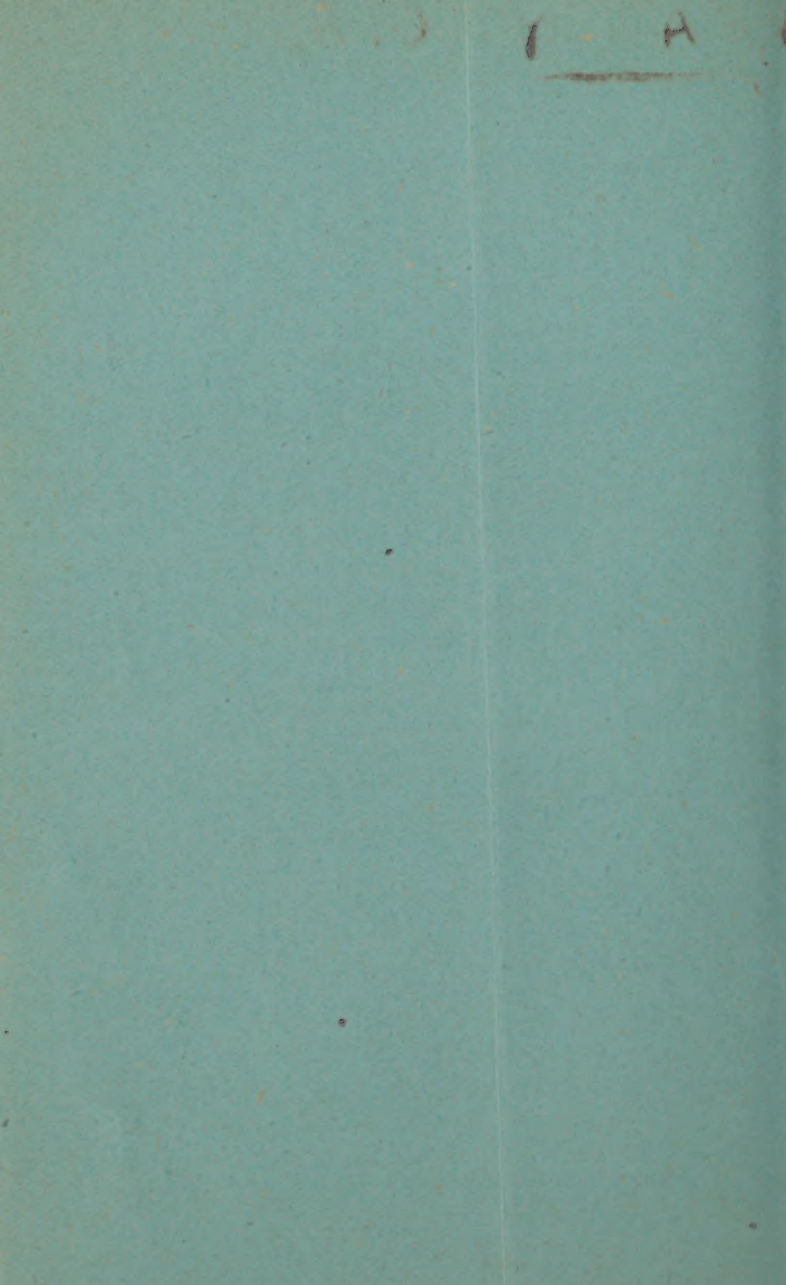
CHIEF CLINICAL ASSISTANT TO THE OPHTHALMOLOGICAL DEPARTMENT OF
THE JEFFERSON MEDICAL COLLEGE HOSPITAL; INSTRUCTOR IN
DISEASES OF THE EYE IN THE PHILADELPHIA POLY-
CLINIC; CONSULTING OPHTHALMIC SURGEON TO
THE PHILADELPHIA LYING-IN CHARITY
AND NURSE-TRAINING SCHOOL.



FROM

THE MEDICAL NEWS,

February 23, 1895.



OPHTHALMIA NEONATORUM.¹

BY C. A. VEASEY, M.D.,

CHIEF CLINICAL ASSISTANT TO THE OPHTHALMOLOGICAL DEPARTMENT OF
THE JEFFERSON MEDICAL COLLEGE HOSPITAL; INSTRUCTOR IN
DISEASES OF THE EYE IN THE PHILADELPHIA POLY-
CLINIC; CONSULTING OPHTHALMIC SURGEON TO
THE PHILADELPHIA LYING-IN CHARITY
AND NURSE-TRAINING SCHOOL.

I SHALL not now attempt to give any elaborate description of this disease, nor shall I review very many of the methods of treatment as practised by different ophthalmologists, but shall confine myself to the characteristics as they appear in typical cases and to those methods of treatment that have in my own hands given the most satisfactory results.

The clinical history of the disease is usually divided into four stages; but as it passes from one into another so imperceptibly it is often difficult, if not impossible, to make any distinction between them. The first, or incubative period, is of short duration, lasting a few hours only, and gradually merges into the second, or lymph-forming stage. This, in a few hours more, is followed by the period of pus-formation, lasting, according to the severity of the attack, from one to several weeks, and if everything goes well is replaced by the last stage,

¹ Read before the J. M. Da Costa Medical Society, December 7, 1894.



that of recession, which is marked by the gradual disappearance of the discharge and the return of the conjunctiva to a healthy and normal condition.

The appearance of a patient suffering with this affection is so characteristic that it is rare for any mistake to be made in the diagnosis. Appearing, as it usually does, on the third day after birth, though it may appear somewhat earlier or later, with a slight redness of the conjunctiva, the lids are soon swollen and tense, the conjunctiva itself velvety and smooth, and upon the surface of which can be detected minute flakes of lymph. In an exceedingly short time, however, the formation of lymph changes to the profuse secretion of pus, the conjunctiva frequently displaying huge cracks in its surface and occasionally being so tender that there is an admixture of blood with the purulent discharge. In mild cases the ocular conjunctiva is scarcely more than hyperemic, but in many it becomes hard and tense, forming an elevated ring around the cornea. Occasionally the upper lid is so heavy from the swelling that it becomes pendulous and hangs down over the margin of the under lid. The disease, which ordinarily has begun in one eye, usually affects the other also, though, as a rule, not in such a severe degree. There is present, of course, severe pain, and the infant's physical condition is much reduced, as would be the case no matter in what part of the body so much pus was being formed.

In most cases in from three to six weeks, if seen early and proper treatment instituted, the discharge gradually disappears, leaving the conjunctiva in a

healthy condition and the visual acuity unimpaired, though in a few there remains a chronic conjunctival inflammation.

In all cases the greatest danger is from some corneal complication. It may begin as a mere abrasion of the cornea from rough handling, which if it occur during the pus-forming stage may result in a large perforating ulcer. Again, the whole cornea may become infiltrated and opaque, small abscesses forming, which may open externally, or into the anterior chamber; or the ulceration may begin at the margin and extend in a ring-like manner around the cornea, there being but little infiltration of the corneal substance, and, as Swanzy¹ has pointed out, these are likely to occur in those cases in which the swollen bulbar conjunctiva forms a hard ring around the cornea, causing considerable pressure, occasionally even covering the ulcer, and are likely to perforate. The greater the involvement of the ocular conjunctiva and the earlier the corneal complication manifests itself, the more serious does the disease become and the more likely is it to result in some impairment of vision, if not absolute blindness; for if the ulcer should perforate, the anterior chamber empties itself, the iris usually becomes incarcerated, and the thinned cornea, unable to resist the pressure, bulges forward more and more until a large anterior staphyloma results; or, on the contrary, after perforation takes place, the eyeball may shrink in size until that condition of affairs known as "phthisis bulbi" is reached.

¹Swanzy: Text-book, "Diseases of the Eye," p. 101.

The etiology of the affection is the introduction into the conjunctival cul-de-sac of the discharge from some portion of the genital tract, and the inoculation may take place during the birth of the child, when it is said to be primary, or the infecting material may be placed *in situ* after birth through the carelessness of the attendant, the inoculation in this case being secondary, and the disease manifesting itself later than the third day.

During the descent of the infant through the birth-canal the inoculation may occur in one of several ways. The lids may be opened in making manual examinations in face-presentations, or in the use of instruments, or in the passing of the face over the tense perineum; and the eyes not being quickly and thoroughly cleansed after birth, the infectious material obtains a footing and the disease becomes rapidly established. Those cases in which the inoculation is secondary are caused by the direct introduction of the infectious material by the use of unclean water, sponges, towels, etc., or, perhaps, through the failure on the part of the attendant to have everything coming in contact with the infant thoroughly cleansed.

The underlying cause in most cases is a peculiar micro organism known as the gonococcus of Neisser, which the discoverer after whom it is named found in all gonorrheal discharges and also in the discharges of all severe cases of ophthalmia neonatorum, though we occasionally see slight cases set up by a vaginal discharge of a non-specific type, and in these the gonococcus is, of course, absent. The more numerous the gonococci,

the more severe and dangerous is the disease ; and, on the contrary, when the number of these micro-organisms begins to decrease, as shown by microscopic examinations of the discharge, the disease is becoming more controllable and less dangerous.

In discussing the treatment it is customary to do so under two heads—prophylactic and curative. Among the means at our disposal which come under the former heading none is more widely known, or gives better results if used, than that which was introduced by Professor Crédè, of Leipzig. As soon as the child is born, and before the cord is cut, if there is time, two drops of a 2 per cent. solution of silver nitrate are dropped into each eye of the infant, the lids and surrounding parts having first been cleansed with a pledget of absorbent cotton. If there is much reaction, compresses are wrung out in a cold solution of boric or salicylic acid, and placed on the closed lids. Sometimes there is considerable hyperemia from the use of the silver-solution, but it almost always disappears in a few days ; and, when we consider the great gain by the use of this preventive method, the slight inflammation is not any drawback. Prior to the use of the method Crédè's statistics showed that 10 per cent. of all newly born children had this disease, while after its use the proportion was reduced to less than one-half of 1 per cent.

Another method of prophylaxis is that known as the Hegar-Korhr, which consisted in washing the face and eyes of the newly born babe with a solution of mercuric chlorid (1 : 1000), and this also gives a large reduction in the proportion of cases of the

disease. Others advocate the use of aqua chlori, claiming that it is fully as effective and less irritating than the solution of silver. Perhaps, after all, it is not so much what method of prophylaxis we use as the fact that we do use some method, and use it thoroughly. It is to be understood that no matter what method is adopted after the birth of the child, during the descent through the birth-canal all precautions against infection, such as antiseptic vaginal douches, thorough cleansing of the hands and all instruments, etc., coming in contact with the parts, are to be most scrupulously effected.

Since the time of the introduction of antiseptic midwifery and the decrease in the percentage of those diseases caused by the absorption of germs from the genital tract, it is perhaps unnecessary to use silver nitrate in each and every case, provided the most scrupulous care be exercised to keep the birth-canal aseptic during labor; but in each case in which there is the least suspicion of specific disease, or even a moderately bad leukorrhea, in addition to the strictest antiseptic precautions during the birth of the child, I would insist upon the use of the Cr  d   method, or one of its recognized substitutes, immediately afterward.

If the disease has become established, our efforts must then be directed, first, to the reduction of the inflammatory condition of the lids and conjunctiva; second, to the prevention of any corneal complication, or the treatment of any already existing. If there is much swelling, and there be no involvement of the cornea, I prefer to employ cold compresses at frequent intervals. These are applied by having a

number of small pieces of flannel or lint laid upon a block of ice, and placing them, two or three in thickness, over the inflamed and swollen lids, changing them at intervals of one minute. These are to be used from fifteen to thirty minutes, every hour or two, or less frequently, according to the severity of the disease. Should there be any corneal involvement, however, hot compresses should be employed instead, in the same manner and at the same intervals as the cold, water at the temperature of 120° F., or about as hot as the hand can bear for an instant, being used instead of the block of ice. As the water grows cooler more hot water should be added to keep up the temperature.

Great care must be exercised to keep the conjunctival cul-de-sac cleansed of the purulent discharge. This can be accomplished by frequent washings with a saturated solution of boric acid or a weak solution of mercuric chlorid (1:6000), cleansing the eyes at intervals of fifteen minutes, or less frequently, according to the amount of the discharge, to be continued during the night as well as during the day. Frequent cleansing of all the discharge from the lids is of the utmost importance. Other solutions have been used for the purpose, such as mercury cyanuret, potassium permanganate, hydrogen dioxid, creolin, chlorin-water, trikresol, pyoktanin, and many of the astringents; but the two mentioned first, boric acid in a saturated solution and mercuric chlorid in the strength of 1:6000, are probably as efficient as any, acting, as they do, only feebly as antiseptics (it being detri-

mental to the cornea to use strong solutions of the mercurial), but also as astringents.

Once a day, when the conjunctiva is in the proper condition, the lids being everted, an application to them of a solution of silver nitrate should be made with a camel's-hair brush or a bit of cotton rolled on the end of a smooth stick (both to be burned immediately afterward) and the excess washed off with a solution of sodium chlorid. It is preferable to begin with a moderately weak solution, say 1 per cent., and increase the strength if necessary. Occasionally it is necessary to use the mitigated stick, and, if this is done, great care must be exercised to wash off the excess, otherwise damage may be done to the cornea.

I wish to enter my protest against the method practised by some physicians of dropping the solutions of silver nitrate into the conjunctival cul-de-sac, so that they come in contact with the cornea, as a remedy to be continued. They will do no harm when dropped in immediately after the birth of the child, and again in a day or two if required; but the continuous use of the drug, day after day, in this manner, will in itself cause an opacity of the cornea by its caustic action—a thing to be studiously avoided and a complication which is inexcusable. I have under my care at the present time an infant on whose eyes this method of using the silver-salt was employed, and it has a milky haziness in each cornea, brought about by the caustic action of the drug. The physician who brought me the case stated that the solution had

been instilled twice daily for three weeks and that the strength was 1 per cent.

As to the proper time for making the applications of the silver salt, it is my custom not to apply it early, before there is free secretion of pus, but to wait until the latter has fully established itself and the conjunctiva has become somewhat soft. The applications should be made daily, and immediately after a strong solution has been used cold compresses should be employed for a few minutes to reduce the inflammatory reaction which may result.

If at any time the cornea should become in the least degree hazy, a drop or two of a solution of atropin, gr. iv- $\frac{1}{3}$ j, must be instilled at once and continued twice or thrice daily, and, as stated before, hot compresses must be used, these seemingly having a decided advantage over the cold in such cases. Should an ulcer form and threaten to perforate, it is perhaps better to anticipate nature by performing paracentesis of the anterior chamber and to keep it open for a few days, thereby assisting in the reparative process by the reduction of intraocular tension; and, no matter how severe the corneal complication should become, the vigorous and careful treatment of the conjunctiva should be carried on just as if it were not present.

By following carefully some such plan of treatment the vast majority of cases, if seen before any corneal involvement has taken place, can be readily cured, though, unfortunately, we sometimes see cases which, like the one of Randall,¹ through

¹ Journal American Medical Association, November 25, 1893.

some peculiar influence that we cannot see or determine, and, in spite of all we can do to prevent, go from bad to worse, until the cornea ulcerates and the eye becomes practically lost. Knowing that such cases do exist, we should be careful to protect ourselves and our colleagues by being guarded as to any exact prognosis, no matter how simple a case may seem to be.

The necessity for being so careful in the prophylaxis of this affection is very well shown by the fact that carefully compiled statistics¹ show that in Spain and Belgium 12 per cent. of all cases of blindness are caused by this disease; in Switzerland, 26 per cent.; in the United Kingdom, 30 per cent.; in Germany and Austria, 33 per cent.; in the United States more than 32 per cent.

It has also been shown that more than 70 per cent. of all cases of blindness occurring in the first year of life are attributable to this disease, and that in nearly 9 per cent. of all births in which no preventive methods are employed ophthalmia results. These facts being considered, there should be no hesitation in employing every known and available precaution to prevent the disease.

The last census of the United States shows the total number of blind to be 50,411. If we take 32 per cent. of these, the number estimated to be due to ophthalmia neonatorum, we have in round numbers 16,131 whose miserable and most pitiable, as well as almost helpless, condition was brought about by this disease, the large majority of which

¹ de Schweinitz: *Annals of Gynecology and Pediatrics*, January, 1892.

might have been prevented had the prophylactic treatment been employed. By consulting the census records¹ from 1850 to 1890 we find the following statistics for the State of Pennsylvania:

Year.	Population.	No. of Blind.
1850,	2,311,786	829
1860,	2,906,215	1187
1870,	3,521,951	1767
1880,	4,282,891	3884
1890,	5,258,014	3925

The number of blind to each 1,000,000 of population in each of these periods is as follows: In 1850, 358; 1860, 408; 1870, 501; 1880, 905; 1890, 765. Thus it will be seen that the proportion of blind has steadily increased during each decade except the last; and, as I can learn of no method of enumeration for our State such as Dr. Bettman refers to for the State of Illinois² that would have materially increased the number in 1880, I am obliged to think that the proportion of infants affected by this disease is on the decrease, and that it is owing to the greater stress which has been given the subject in our medical schools during this last decade, to the number of papers that have been written calling the attention of the general physician to the disease, to the increased employment of antiseptic midwifery, and to the

¹ After the manner of Bettman for the State of Illinois: Journal American Medical Association, May 19, 1894.

² Dr. Bettman quotes from the report of the State Board of Public Charities for Illinois that, in addition to the regular census-returns for 1880, there was private correspondence with physicians, who added many names to the lists. This was not repeated in the last census.

general and active discussion in many of our medical organizations throughout the country which, in many of our States, has resulted in legislation that, in a few words, makes it a misdemeanor, punishable by fine or imprisonment, or both, for any nurse or attendant upon a case of labor not to report to some reputable physician, or to the Public Health Officer, if either or both eyes of the infant should become in the least red or inflamed at any time within two weeks after birth. As is well known, if the case is seen early and proper treatment instituted, the result will almost always be a cure with perfect vision, though, as stated, there are some cases, malignant from the beginning, that go from bad to worse, despite all our efforts to the contrary.

It is hoped that we shall soon have such a law in our own State. The matter was brought to the attention of our State Medical Society at its last meeting by Dr. Gould, and a committee was appointed to use all means to have some such legislation as that indicated effected at the next meeting of our legislative bodies. Such a bill has been framed, is receiving the indorsement of medical societies, and I trust will have the support of every physician in the State.

1720 ARCH STREET.

The Medical News.

Established in 1843.

A WEEKLY MEDICAL NEWSPAPER.

Subscription, \$4.00 per Annum.

The American Journal
OF THE
Medical Sciences.

Established in 1820.

A MONTHLY MEDICAL MAGAZINE.

Subscription, \$4.00 per Annum.

COMMUTATION RATE, \$7.50 PER ANNUM.

LEA BROTHERS & CO.
PHILADELPHIA.